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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,297	03/11/2002	Osamu Kobayashi	P67421USO	1654

136 7590 09/08/2004

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WASHINGTON, DC 20004

EXAMINER

PATEL, VISHAL A

ART UNIT	PAPER NUMBER
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3676

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,297

Applicant(s)

KOBAYASHI ET AL.

Examiner

Vishal Patel

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new

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 12-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokomachi et al (US. 6,398,515B1) in view of Riesing (US. 2,804, 325) and further in view of Holzer (US. 4,750,747).

Yokomachi discloses a method providing a lip seal (27) that is used in a refrigerating system having a housing and the refrigerant is carbon dioxide (as indicated by the applicant that refrigerant system that are using carbon dioxide will have the carbon dioxide under pressure of 4Mpa to 12Mpa, further it is disclosed by Yokomachi that Co2 systems have a pressure ten times higher than a fluorocarbon based system, see column 1, lines 30-35). Installing the lip seal between the shaft and housing (see figure 1, housing 12 and shaft 14). The lip seal contacts the shaft. Applying a carbon dioxide gas pressure pf 4 to 12 Mpa to the lip seal that will deform the lip seal (any pressure applied to the lip seal 27 causes the lip seal to deform to further contact the shaft). The lip seal has a gas permeability coefficient (all materials have a gas permeability coefficient).

Yokomachi disclose the invention substantially as claimed above but fail to disclose that the sealing lip is made of non-elastomeric, polymer material, the polymer material being a gas barrier material impervious to carbon dioxide gas at the pressure of 4-12 Mpa and having the gas

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permeability coefficient of less than 1×10^{-13} ($\text{cm}^3 \cdot \text{cm} / \text{cm}^2 \cdot \text{sec} \cdot \text{pa}$) for carbon dioxide gas at a pressure of 4 Mpa, a liner placed on an inner circumferential face of the lip that is a low-friction liner. Riesing discloses a lip-type high-pressure seal (20) comprising an annular metallic casing (40), an annular sealing lip (34) secured to the casing (the sealing lip is made of elastomer, column 2, line 12), a low friction lining (lining 48 made of PTFE, column 3, lines 24-30) bonded to the sealing lip, the sealing lip having a gas permeability coefficient, the lip-type seal is installed on a shaft, which is surrounded by a housing (figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the lip seal of Yokomachi to be a lip seal as claimed by Riesing to provide low friction and heat-resistant lip seal for rotating shaft (column 3, lines 28-35).

Yokomachi and Riesing discloses the invention substantially as claimed above but fails to disclose that the sealing lip be made of polyamide (making the seal lip from polyamide will have a high gas barrier, a high modulus of elasticity and also will have a coefficient of less than 1×10^{-13} ($\text{cm}^3 \text{cm} / \text{cm}^2 \text{secPa}$) for carbon dioxide gas under pressure of 4MPa). Holzer discloses that a lip seal can be made of rubber-elastic material (elastomer) or polytetrafluoroethylene or polyamide (column 4, lines 55-60 of Holzer). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the lip seal of Yokomachi and Riesing to be made of polyamide as taught by Holzer, since having the sealing lip made of elastomeric material or polyamide is considered to be art equivalent. Furthermore Holzer teaches that choosing a particular material for a sealing lip would take empirical testing (column 4, lines 55-60 of Holzer).

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3. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokomachi, Riesing and Holzer as applied to claim 12 above, and further in view of Goodman (US. 6,164,660).

Yokomachi, Riesing and Holzer disclose the invention substantially as claimed above but fail to disclose that the sealing lip is made of a polymer material selected from group consisting of polyvinylidene fluoride, polyvinyl chloride, poly-chlorotrifluoroethylene and polyvinyl alcohol. Goodman discloses a sealing lip (18) made of elastomer or rubber elastomer material (column 9, lines 63-65) or a polymer material selected from group consisting of polyvinylidene fluoride, polyvinyl chloride, poly-chlorotrifluoroethylene and polyvinyl alcohol (column 9, lines 45-51). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the sealing lip of Yokomachi, Riesing and Holzer to be made of a polymer material selected from group consisting of polyvinylidene fluoride, polyvinyl chloride, poly-chlorotrifluoroethylene and polyvinyl alcohol as taught by Goodman, since having a sealing lip made of elastomer or rubber elastomer material or a polymer material selected from group consisting of polyvinylidene fluoride, polyvinyl chloride, poly-chlorotrifluoroethylene and polyvinyl alcohol is considered to be art equivalent or select material that provide seals in a specific environment (column 9, lines 40-65 of Goodman).

Response to Arguments

4. Applicant's arguments with respect to claims 12-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is (703) 308-8495. The examiner can normally be reached on Monday through Friday from 7:30 PM to 4:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Swann, can be reached on (703) 306-4115.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168. Technology Center 3600 Customer Service is available at 703-308-1113. General Customer Service numbers are at 800-786-9199 or 703-308-9000. Fax Customer Service is available at 703-872-9325.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to: 703-872-9326, for formal communications for entry before Final action: or,

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703-872-9327, for formal communications for entry after Final action.

Hand-delivered responses should be brought to Crystal Park Five, 2451 Crystal Drive, Arlington, Virginia, Seventh Floor (Receptionist suite adjacent to the elevator lobby).

VP

September 1, 2004



ALISON PICKARD

Primary Patent Examiner

Tech. Center 3600